



Patent Application
Docket No. USF-182XC1
Serial No. 10/655,873

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner : Louis D. Lieto, Ph.D.
Art Unit : 1632
Applicants : Shyam S. Mohapatra, Mukesh Kumar
Serial No. : 10/655,873
Filed : September 5, 2003
For : Genetic Adjuvants for Immunotherapy

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF SHYAM S. MOHAPATRA, PH.D., UNDER 37 C.F.R. §1.132

Sir:

I, Shyam S. Mohapatra, Ph.D., of the University of South Florida, hereby declare:

THAT, I am a professor within the College of Medicine at the University of South Florida;

THAT, my *curriculum vitae* is attached hereto as Exhibit A;

THAT, I am a co-inventor of the technology described and claimed in patent application Serial No. 10/655,873 (hereinafter referred to as the '873 application);

THAT, I have read and understood the specification and claims of the '873 application, the Office Actions dated January 13, 2005, October 17, 2005, and December 15, 2005, and the references cited in the foregoing Office Actions;

THAT, I am a co-author on the following publication: Kumar *et al.*, "IFN- γ and IL-12 plasmid DNAs as vaccine adjuvant in a murine model of grass allergy", *J. Allergy Clin. Immunol.*, 2001, 108:402-408;

THAT, through my years of research, I have kept up to date on the technical literature and maintained contact with experts in the field by participating in professional meetings and seminars, and by direct personal contact. As a result, I am familiar with the general level of skill of those

working in the fields of therapeutic and prophylactic modulation of allergic immune response, inflammation, and asthma;

AND, being thus duly qualified, do further declare:

1. Claims 1, 4, 9, 11, 14, 15, 18, 20, 27, 28, 30, 31, 43-48, and 51-56 in the '873 application have been rejected under 35 U.S.C. §102(a) in the current Office Action on the ground that the claimed invention is anticipated by the above-referenced Kumar *et al.* publication. In addition, claims 2, 3, 6, 8, 12, 21, 23, 24, 26, 29, 50, and 57 have been rejected under 35 U.S.C. §103(a) on the ground that the claimed invention is obvious over Kumar *et al.* in view of Hogan *et al.*, Carroll *et al.* (*J. Nat. Cancer. Inst.*, 1998, 90:1881-1887), Genbank Accession No. B38957, Genbank Accession No. X13274, Maroun (U.S. Published Patent Application No. 2003/0138404), and Thill *et al.* (European Patent Application No. EP 0 343 388). The inventorship of the claimed invention and the authorship of the Kumar *et al.* publication differ in that although Drs. Aruna K. Behera, Jianan Hu, and Richard Lockey are co-authors of the Kumar *et al.* presentation, they are not inventors on the '873 application. Thus, Dr. Mukesh Kumar and I are co-authors of the Kumar *et al.* publication and are inventors on the '873 application.

2. As the Examiner is aware, it is not uncommon for persons other than those involved in the conception of an invention to be listed as co-authors on a scientific publication resulting from the research related to the invention. These are the circumstances surrounding the Kumar *et al.* publication and the subject matter claimed in the '873 application.

3. Dr. Kumar and I contributed to the conception of the claimed invention and are, therefore, inventors of the '873 application. In the course of our research concerning the use of plasmids expressing the cytokines IFN-gamma and/or IL-12 as adjuvants in modulating allergic immune response, inflammation, and asthma, we have been assisted in various ways by others. Dr. Behera was a post-doctoral associate employed in my laboratory. Dr. Hu was a visiting scientist from China and temporarily employed in my laboratory. While working on this project under the direction of Dr.

Kumar, Drs. Behera and Hu assisted in the preparation of plasmids, vaccination protocols, splenocyte culture, assessment of pulmonary function, and histological analysis. Dr. Lockey is the Director of the Division of Allergy and Immunology at the University of South Florida, College of Medicine, and contributed to the drafting and editing of the manuscript. Therefore, Drs. Aruna K. Behera, Jianan Hu, and Richard Lockey were included as co-authors of the above-referenced Kumar *et al.* publication; however, they did not contribute to the conception of the subject matter claimed in the '873 application. Accordingly, they were not included as co-inventors on the '873 application.

4. Claims 1-10, 12-14, 20-29, 43-45, 47, 49, 50, and 54-57 have been rejected under 35 U.S.C. §103(a) as being obvious over Hogan *et al.* (*Eur. J. Immunol.*, 1998, 28:413-423) and further in view of Li *et al.* (*J. Immunol.*, 1996, 157:3216-3219) and Dow *et al.* (U.S. Patent No. 6,693,086). The claimed invention is not obvious for the reasons discussed below.

5. At page 8, the current Office Action states

“... applicant has not indicated why the skilled practitioner would not expect that IL-12 and IFN- γ would interact to produce a synergistic effect given that Hogan *et al.* teaches that IL-12 upregulates ILN- γ [sic] production, which is vital for protection from allergic airways disease. This suggests that the two cytokines have complex interactions/regulatory roles that are more likely to be synergistic than additive in effect.”

While it is true that IL-12 and IFN-gamma have complex interactions and regulatory roles, this does not mean that delivery of nucleic acids encoding these two cytokines is more likely to have a synergistic effect, and synergy certainly would not be expected by one of ordinary skill in the art. The method of the invention involves the administration of a nucleic acid sequence encoding IL-12 and a nucleic acid sequence encoding IFN-gamma, resulting in an increase of Th1-type cytokine production and a decrease of Th2-type cytokine production. The references cited in the current Office Action provide no reasonable expectation of achieving this result. Moreover, as indicated at page 30, lines 3-4, of the '873 application, and shown in Figure 3C, administration of plasmids encoding IL-12 and IFN-gamma resulted in a synergistic shift in cytokine profile. Specifically, Th1-

type cytokine production was increased and Th2-type cytokine production was decreased. Figure 3C is a graph showing an analysis of the dominant cytokine pattern after cytokine DNA vaccination in a mouse model. To examine the dominant pattern of cytokine responses, IFN-gamma/IL-4 and IL-2/IL-4 ratios were compared among different groups of mice. The results indicate that the net cytokine balance shifted in favor of the Th1-type response in cytokine-vaccinated mice; however, this shift was significantly greater in the group vaccinated with the combination of IFN-gamma and IL-12. Moreover, Figure 3C shows that the ratio of IFN-gamma/IL-4 was increased beyond what would be expected from the additive effects of IL-12 and IFN-gamma, individually. The benefits of the claimed method and compositions are unexpected in view of the cited references, and have a significant, practical advantage for immunotherapy.

6. Hogan *et al.* showed that the effectiveness of IL-12 was dependent upon the presence of IFN-gamma gene expression. The Hogan *et al.* publication describes a single experiment showing that vaccinia virus-mediated delivery and expression of the IL-12 gene significantly decreased the number of BAL eosinophils only if mice had the IFN-gamma gene. From this experiment, one of ordinary skill in the art would conclude that to exert its effect on eosinophilia, IL-12 requires the IFN-gamma gene to be present and that IL-12 presumably acts by inducing IFN-gamma gene expression. One of ordinary skill in the art would not interpret these results to demonstrate or suggest that exogenous delivery of IL-12 and IFN-gamma genes together provide a synergistic effect. Prior to our work in the above-referenced Kumar *et al.* publication, the following was known in the field: (1) IL-12 gene transfer by itself was able to decrease eosinophilia, presumably by shifting the immune response from a Th2-type to a Th1-type, but this required a functional IFN-gamma gene; and (2) the IFN-gamma gene also, by itself, decreased eosinophilia and airway hyper-reactivity, and shifted the Th2-type response to the Th1-type response. The '873 application shows that these two observations are correct *i.e.*, by individually administering 100 micrograms of cytokine-encoding plasmids per mouse. Furthermore, when we administered both plasmids together at half of the dosage (50 micrograms of each cytokine-encoding plasmid per mouse), we observed the synergistic effect (shown in Figure 3C). From the previous data, we would have reasonably expected a result

similar to that of either IL-12 or IFN-gamma administered individually. Thus, at the time the application was filed, based on all previous reports, one of ordinary skill in the art would expect that administering the combination of IL-12 and IFN-gamma-encoding plasmids at half amounts (50 micrograms each per mouse) would yield effects similar to that of IL-12 or IFN-gamma alone. Also, neither an additive nor a synergistic effect would be expected or reasonably predicted from the combination of IL-12 and IFN-gamma-encoding plasmids at 100 micrograms per mouse, because doubling the dose could easily lead to toxicity.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or of any patent issuing thereon.

Further declarant sayeth naught.

Signed:


Shyam S. Mohapatra, Ph.D.

Date:

4/17/06

Curriculum Vitae of Prof. Shyam S. Mohapatra, PhD, FAAAAI

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 Tampa, FL 33647
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USF Affiliation:

Professor and Director of Basic Research,
 Division of Allergy and Immunology and the Joy McCann Culverhouse Airway Disease Center,
 Department of Internal Medicine, Univ. of South Florida College of Medicine,
 12901 Bruce B. Downs Blvd, Tampa, FL 33612,
 Ph: (813) 974 -8568, Fax: (253) 276-7470, Email: smohapat@hsc.usf.edu
 Joint Appointments with: Department of Medical Microbiology and Immunology (1997-), COM
 Department of Biochemistry and Molecular Biology (2002-), COM
 Department of Pediatrics, COM, and
 Department of Environmental and Occupational Health, CPH

VA Affiliation:

Molecular Biologist & Principal Investigator, Medical Service, James A Haley VA Medical Center,
 13000 Bruce B Downs Blvd, 13000 Bruce B Downs Blvd, Tampa, FL 33612
 Ph: (813) 972 -7631, Fax: (813) 972- 7623

Moffitt Affiliation:

1997: Member of H. Lee Moffitt Cancer Center and Research Institute
 2002: Member of Moffitt Cancer Biology PhD program

Education and professional training:

1976	BS, Orissa Univ of Agril and Technology, Bhubaneswar, India
1978	MS, GB Pant Univ of Agril & Technology, Pantnagar, India
1984	Ph.D. (Genetics) Australian National University, Canberra
1984-85	Alexander Von Humboldt Research Fellow, Genetics, Univ. of Bielefeld, Germany
1986-87	Research Associate, Biology, McGill University, Montreal
1993	Visiting Scientist, Immunology, Mayo Clinic, Rochester, MN
1993	Visiting Professor, Allergy & Clinical Immunology, University of Florence, Italy
1999	MBA, University of South Florida

Faculty Positions held:

1988-91	Assistant Professor, Immunology, University of Manitoba, Winnipeg
1992-95	Associate Professor (with tenure), Immunology, University of Manitoba, Winnipeg
1996-99	Associate Professor, Internal Medicine, University of South Florida, Tampa
1996-99	Associate Professor, Medical Microbiology & Immunology, Univ. of South Florida,
1997-	Director of Basic Research, J.M. Culverhouse Airway Disease Research Center.

2000- Professor of Internal Medicine, University of South Florida College of Medicine.

Specialization (specify)

- (i) Main field: Immunology and Inflammation, Molecular biology of viral infection
Molecular Biology and Genetics of IgE responsiveness, and
- (ii) Current research interests:
 - Molecular mechanisms of virus infection
 - Development of prophylactic/therapeutic gene transfer
 - Development of Genetic antivirals
 - Molecular basis of genetic predisposition to inflammatory diseases.
 - Development of nanotechnology and its application to diagnosis and therapy
- (iii) Technical discipline: Molecular biology, cell biology, immunology, microbiology, gene therapy, nanotechnology

Honors, Awards, Fellowships:

- 1980-83 - ANU Post-Graduate International Research Award, tenable in the Australian National University, Canberra for Ph.D. research, 1980-83.
- 1984-85 - Alexander von Humboldt (AvH) Research Award, AvH Foundation, Bonn, Germany
- 1988 - St. Boniface Research Foundation Scholarship, (Declined)
- 1988-91 - Research Scholar, Manitoba Health Research Council, Winnipeg
- 1989 - Canadian Society of Immunology Travel Award
- 1992 - Univ. of Manitoba Merit Award for excellence in research and creative activities
- 1992 - Pharmacia Allergy Research Foundation Award, Paris, for excellence in research on IgE mediated reactions. *[A major International Award in the field of Allergy]*
- 1993 - Medical Research Council (MRC) Visiting Scientist Award.
- 1993 - Named to the World Health Organization Expert Panel on Recombinant Allergens, Geneva.
- 1997 - Research and Creative Scholarship Award, University of South Florida.
- 1997 - Presidential Honored Research Faculty Recognition, University of South Florida.
- 1997 - *Ad hoc* Member of the NIH-NIAID Scientific Review Panel, on AIDS, vaccines and Immunology of Aging, June, 1997.
- 1998 - Member of the American Lung Association Research Grant review Committee.
- 1998 - American Lung Association of Florida Career Development Award.
- 1999 - American Heart Association, Florida Affiliate, Research Grant Award, 1999-2001.
- 1999 - Veteran Administration Merit Review Award, 1999-2004.
- 2000 - Member, INTERNATIONAL WHO' S WHO Association, NC.
- 2000 - Named with biography in the distinguished AMERICAN WHO's WHO, 2001 Edition.
- 2000 - Member of American Thoracic Society Advisory Board on Education.
- 2002 - Editor-in-chief of the online Journal: "Genetic Vaccines and Therapy."
- 2003: - Member, NIH Study Section (SEP on ancl Asthma and Allergic Diseases Research Centers: innate immunity, bioterrorism.)
- 2004: - Outstanding Biotechnology Recognition Award, University of South Florida, Health Science Center.
- 2004: - Chairman of NIH Study Section (SEP on Signaling of the Immune System).

- 2004: - Co-founded a start-up biotech Company: TransGenex Nanobiotech, Inc, Tampa
- 2004: - Chairman, Scientific Advisory Board of TransGenex Nanobiotech Inc, Tampa
- 2005: - Outstanding Biotech Achievement Award, University of South Florida- Health Science Center, Tampa.
- 2005: - Sigma Xi 2004-05 Outstanding Faculty Researcher Award, Tampa Bay Chapter, Tampa.
- 2005: - Univ South Florida Outstanding Faculty Research Achievement Award, Tampa.
- 2005: - Member, NIH Study Section (SEP on NCI's Nanotechnology Platforms for Cancer).
- 2005: - Member, NIH Study Section (SEP on NIAID "Leadership in Clinical trials for HIV/AIDs).
- 2006: - Member, Advisory Board, NIPER-NANO-2006 Conference - Nanotechnology in Advanced Drug Delivery, National Institute Pharmaceutical Education and Research, Chandigarh, India, Feb 17-18, 2006
(<http://www.geocities.com/nanotechnologydrugdelivery>)
- 2006-2008 Co-Chair/Chair for American Heart Association Scientific Review Panel.

Membership of Honored /Professional Societies:

- 1988-95 - Member, Canadian Society of Immunology
- 1990-95 - Member, Canadian Society of Allergy and Immunology
- Member, European Academy of Allergology and clinical Immunology
- 1992- - Member, Pharmacia Allergy Research Foundation, Uppsala, Sweden
- 1992- - Member, American Association of Immunologists
- 1993- - Member, American Academy of Allergy and Clinical Immunology
- 1998- - Elected as Fellow of the American Academy of Allergy, Asthma and Clinical Immunology
- 1998- - Elected as Honorary Member of the Mexican Society of Allergy and Immunology
- 1999- - Member, American Thoracic Society.

Membership of Committees/Review Panels:

- 2005 - Member, Am Thoracic Society AAI Program Committee
- 2004 - AAAAI Workshop Representative for MAAI Interest Section
- 2004 - AAAAI Workshop Committee Vice Representative, MAAI Interest Section
- 2004 - Member, Protocol Committee, Am.Lung Assoc-Asthma Clin Res Center Network,
- 2002 - NIH Study section-Centers of Excellence on allergy and asthma.
- 2001- Member of Scientific Review Panel, American Heart Association, Southern Cons.
- 1998- Member of Scientific Review Panel, American Lung Association, NY
- 1999- Member of the Cells & Cytokine Committee, Am. Acad Allergy, Asthma and Immunology
- 1998- Molecular Biology and Genetics Committee, American Academy of Allergy Asthma, and Immunology
- 1998: Member of the Molecular Biology and Genetics Committee, American Academy of Allergy Asthma, and Immunology.
- 1997: Member of Interview Committee for admission of Medicine Students, USF Faculty of

- Medicine,
- 1997: Member of Review Panel for Student Research, USF Faculty of Medicine,
- 1993-95: Member of Operating Grants Panel of the Manitoba Health Research Council, Winnipeg, Canada.
- 1994: Member of Faculty of Medicine Research Awards Committee, College of Medicine, Univ. Manitoba
- 1994: Member of the International Scientific Board, 5th Int. Symp. of Aerobiology, Bangalore, India
- 1993: Member of the Cytokine committee, American Academy of Allergy and Immunology.
- 1993: Member of World Health Organization Expert Panel on Recombinant Allergens and Epitopes, Geneva, Feb 22-24.
- 1990-93: Member, Interview Committee for the Admission of Students to the Undergraduate Program, Faculty of Medicine,
- 1992: Member of the IUIS/WHO Expert Panel for the nomenclature and development of guidelines for treatment of allergies using recombinant allergens.
- 1990: Member, International Committee on Genetics of Asthma Study,
- 1990-92: Member, International Collaborative Study on HLA Association of Allergies,
- 1989: Member, International Committee-at-large for Allergen Nomenclature,

Chair/Moderator, Scientific sessions:

- 2006: Co-Moderator, Advanced Seminar on "Nanotechnology and applications to Allergy and Asthma" American Academy of Allergy, Asthma and Immunology, Miami, FL , March , 2006 (Invited).
- 2006: Co-organizer, NIPER-NANO-2006 Conference - Nanotechnology in Advanced Drug Delivery, National Institute Pharmaceutical Education and Research, Chandigarh, (<http://www.geocities.com/nanotechnologydrugdelivery>) India, Feb 17-18, 2006.
- 2005: Co-organizer, 8th International Congress on Emerging Technologies on drug and Gene-based Therapeutics, (http://www.gtmb.org/2005_Conference/Program.pdf.) Sept 3-10, 2005, Crete, Greece.
- 2002: Plenary lecturer in International RSV conference, Washington DC, June 2002
- 2002: Plenary lecturer in Symposium, American Academy of Allergy, Asthma and Immunology on "IFN- γ Gene therapy Against Allergy and Asthma" New York, March, 2002.
- 2001: Plenary lecturer in Workshop, American Academy of Allergy, Asthma and Immunology on 'effects of adjuvants in Vaccines and allergies" New Orleans, 2001.
- 2001: Moderator, Breakfast Seminar, American Academy of Allergy, Asthma and Immunology on "IL-4 Receptor and immunomodulation of atopic response" New Orleans, 2001.
- 2000: Moderator, Breakfast Seminar, American Academy of Allergy, Asthma and Immunology on "IL-4 Receptor and immunomodulation of allergic response" San Diego, 2000.
- 1997: Moderator, American Academy of Allergy, Asthma and Immunology Mini Symp. on "Allergen Characterization", San Francisco.
- 1997: Moderator, American Academy of Allergy, Asthma and Immunology Mini Symp. on

- 1997: "Molecular Biology of Allergic Response", San Francisco, Moderator, Symposium on 'Allergy and Asthma in the Year 2000 and Beyond', University of South Florida.
- 1996: Moderator, AAAI advanced Seminar on "New therapies for allergic disease: Peptide immunotherapy.", 52 Ann.Meeting of AAAI, New Orleans.
- 1995: Moderator, AAAI advanced Seminar on "New therapies for allergic disease: Peptide immunotherapy and the induction of T cell anergy", 51 Ann. Meeting of AAAI, New York.
- 1994: Chair and organizer, Symposium on Molecular Characterization of aeroallergens, 5th Int. Symp. of Aerobiology, Bangalore.
- 1994: Chair, Scientific session of Allergenic cross-reactions. 15th Int. Congr. of Allergology and Clinical Immunology, Stockholm.
- 1994: Chair, International Symposium on immunopathology and immunomodulation of atopy and asthma, Winnipeg.
- 1992: Moderator, Advance Seminar on "T cell epitopes of allergens", American Academy of Allergy and Immunology.
- 1992: Chair, Scientific Session on Grass Pollen Allergens, Int. Symp. on Molecular Biology and Immunology of Allergens, Vienna,.
- 1991: Chair, Scientific Session on HLA and Allergy Workshop, San Francisco.

Ad Hoc Reviewer for:

Grants:

American Lung Association
 American Heart Association
 Member, NIH Study Section (SEP on Leadership for HIV/AIDS Clinical Trials Networks)
 Member, NIH Study Section (SEP on NCI Nanotechnology Platforms)
 Chairman of NIH Study Section (SEP on Signaling of the Immune System), 2004
 Member, NIH Study Section (SEP on ancl Asthma and Allergic Diseases Research Centers: innate immunity, bioterrorism), 2003
 NIH Study Section on AIDS and Vaccine Development, 1997-
 VA Merit Review Application, JAH VA Hospital, 1997-
 NATO collaborative grant, 1995-
 NSF collaborative grant, 1995-
 British Columbia Health Research Council Operating Grants, 1995-
 Medical Research Council of Canada Operating and Scholarship grants, 1993-
 Manitoba Health Research Council, Winnipeg, 1992-95
 NSERC, Canada -Operating and Strategic Grants, 1991-96
 NSERC, Canada- Independent Investigator Research Programs, 1991-96
 National Asthma Campaign, London, England, 2001-
 Asthma Foundation of Netherlands, Amsterdam, 2002-

Manuscripts:

Genetic Vaccines and Therapy, Editor-in –Chief, 2003-
 Clinical and Molecular allergy, 2004 (Assoc Editor)
 Journal of Allergy and Clinical Immunology, 1998-
 American Medical association Asthma Web, 1997-
 Biodrugs, 1997
 Immunology Today, 1996-
 Journal of Clinical Investigations, 1996-
 International Journal of Cancer, 1993-
 Allergy, 1993
 Journal of Immunology, 1992-
 Journal International Archives of Allergy and Immunology, 1991-
 Journal of Cellular and Molecular Biochemistry, 1989
Vaccine
American J Crit Care Medicine
 Gene Therapy
 Molecular Therapy
 Human gene therapy
 European Respiratory Journal

Thesis Examination:

External Examiner, PhD thesis, Characterization of tropomyosin as the major allergen of Shrimp, by Ms K.N. Shanti, Indian Institute of Science, Bangalore, India, 1994.

External Examiner, PhD thesis, "Molecular Characterization of Dust mite allergens" by M. Dilworth, University of Western Australia, 1994.

Examiner, Ph.D. thesis, "Developmental and molecular characterization of allergen cognates in barley" by James Astwood, University of Manitoba 1993.

Examiner, Ph.D. thesis, "Down-regulation of antigen specific antibody responses by CDR3 peptides of antigen receptors of CD8 positive suppressor T cells" by Subhra Mohapatra, University of Manitoba. 1993.

Examiner M.Sc. thesis of Hui Wang, entitled "In vivo and in vitro study of murine cytokine gene expression via RNA and protein analysis", University of Manitoba. 1992

Examiner, Ph.D. thesis, "Characterization of ovalbumin-specific suppressor T cells and their suppressor factors induced by tolerogenic conjugates of ovalbumin and monomethoxy polyethelene glycol", by Youhai Chen, University of Manitoba. 1992

External Examiner, Ph.D. thesis "B cell epitope analysis of recombinant house dust

Mite allergens" by W.K. Greene, University of Western Australia, Perth. 1991

Professional Communications:

Plenary lecturer in important national/ international symposia:

- 2006: Plenary Lecturer, Florida Association of Allergy, Asthma and Immunology, FL, June 2006 (Invited).
- 2006: Plenary Lecturer, Symposium on Nanoparticles and gene therapy, Congress on Particles, Orlando, FL, May 2006. (Invited).
- 2006: Plenary Lecturer: Pittsburg Annual International Lung symposium, April 2-4, 2006 (Invited).
- 2006: Invited Lecture, Workshop on "Nanotechnology applications to allergy and asthma", American Academy of Allergy, Asthma and Immunology, Miami, FL, March 3-7, 2006.
- 2006: Invited Lecture, Workshop on "Regulation of Allergic Inflammation by Hormonal peptides", American Academy of Allergy, Asthma and Immunology, Miami, FL, March 3-7, 2006.
- 2006: Discussion Leader and Lecture, Advanced seminar on "Nanotechnology and asthma", American Academy of Allergy, Asthma and Immunology, Miami, FL, March 3-7, 2006.
- 2006: Invited Lecture, Workshop on "Regulation of Allergic Inflammation by Hormonal peptides", American Academy of Allergy, Asthma and Immunology, Miami, FL, March 3-7, 2006.
- 2006: Plenary Lecturer, NIPER-NANO-2006 Conference - Nanotechnology in Advanced Drug Delivery, National Institute Pharmaceutical Education and Research, Chandigarh, (<http://www.geocities.com/nanotechnologydrugdelivery>) India, Feb 17-18, 2006.
- 2005: Plenary Lecturer: Annual Meeting of the American College of Chest Physicians, Montreal, Canada, October 29-Nov 3, 2005. (invited)
- 2005: Plenary lecturer in 8th International Congress on Gene and Drug Therapeutics, (http://www.gtmb.org/2005_Conference/Program.pdf.) Sept 3-10, 2005, Crete, Greece.
- 2005: Plenary lecturer in Workshop on "Benefits and harmfulness of infections in allergy and asthma, World allergy congress, Munich, 2005.

- 2002: Plenary lecturer in major Symposium of Annual Meeting of the American Academy of allergy, asthma and Immunology, New York, March, 2002.
- 2001: Plenary lecturer in major Symposium of Annual Meeting of the American Chest Physician's Foundation, Philadelphia, June, 2001.
- 2001: Plenary lecturer in major Symposium of International asthma Congress, Chicago, 2001.
- 2000: Plenary lecturer as external professor: Annual training Course for Pediatricians, Jalisco, Guadalajara, May 15-19, 2000.
- 2000: *Presenter* in Breakfast Seminar: 56th Annual Meeting of the American academy of Allergy Asthma and Immunology, San Diego, CA, March 2000 (invited)
- 2000: Workshop on MAPKs, ATS Meeting, 2000, Toronto, April 5-10, 2000.
- 1999: Plenary lecturer as external professor: 50th Annual Congress of the Indian College of Allergy and Immunology, Chandigarh, November 1999.
- 1999: Plenary lecturer as external professor: 53rd Mexican Congress of Allergy and Immunology, Porte Villarta, Mexico.
- 1998: Invited Speaker, International Congress of Immunology, Workshop on 8 Allergens and allergic reactions, New Delhi, October 1998.
- 1998: Plenary lecturer: XV Colombian Congress of Internal Medicine, Cartagena de Indias, October 08-11, 1998. Topics: Application of molecular biology to allergic disease, and Animal models of Asthma.
- 1998: Plenary lecturer as external professor: 52nd Mexican Congress of Allergy and Immunology, Zacatecas, Mexico.
Topics: The nature versus nurture: Spotlight on asthma
DNA Vaccine: Applications in allergy and asthma
RSV infection and asthma: is there a link?
- 1998: Plenary lecturer as external professor: VII Workshop on Advances in Clinical Immunology and Allergy, Topic: "Advances in treatment of asthma" Mexico city.
- 1997: 53rd American Academy of Allergy, Asthma and Immunology Mini Symp. on "Allergen Characterization", San Francisco.
- 1997: 53rd American Academy of Allergy, Asthma and Immunology Mini Symp. on

- "Molecular Biology of Allergic Response", San Francisco,
- 1997: Symposium on "Allergy, Asthma and Clinical Immunology in the Year 2000 and Beyond", University of South Florida.
- 1996: American Academy of Allergy, Asthma and Immunology Advanced Seminar on "New therapies for allergic disease: Peptide immunotherapy.", 52 Ann. Meeting of AAAI, New Orleans.
- 1995: 50th Mexican Society of Allergy and Immunology, Guadalajara, Mexico, October 1995. Topic: Role of adhesion molecules in allergy and asthma.
- 1995: Interasthma-95, Guadalajara, Mexico, October 1995. Symposium on Immunotherapy, Topic: Basic aspects of specific Immunotherapy
- 1995: North Central Allergy Conference, Minneapolis, U.S.A. Topic: Advances in Peptide Immunotherapy: potential and implications
- 1995: Workshop on regulation of IgE response. 51st Amer. Acad. Allergy and Immunol., New York, 1995. "Inheritance of IgE Immune responsiveness in mice".
- 1995: Workshop on Immunotherapy of allergic diseases. 8th Int. Congress of Immunology, San Francisco, July 1995. "Recombinant allergens and peptides: implications in immunotherapy".
- 1995: Workshop on allergens and allergy. 8th Int. Congr. Immunology, San Francisco, July 1995. "Failure to induce IgE antibody in SJL mice is not due to a defect in IL-4 production".
- 1994: Workshop on "aeroallergens", 50th American academy of Allergy and immunology, Annaheim, 1994. "identification of a novel highly cross-reactive allergen of plant pollens"
- 1994: 15th International Congress of Allergology and Clinical Immunology and European Academy Of Allergology and Clinical Immunology, Stockholm June 1994. "Meet the Professor Luncheon Seminar" with Prof. D. Kraft. Topic: "treatment of allergies with peptides: the future?"
- 1994: 15th International Congress of Allergology and Clinical Immunology and European Academy Of Allergology and Clinical Immunology, Stockholm June 1994. "Symposium on Basic Allergy: IgE regulation and therapy". Topic: "Therapy of IgE mediated reaction with recombinant allergens and epitopes".
- 1994: 5th International Congress of Aerobiology and Health, Bangalore (India) August

1994.

Topic : "Treatment of pollen allergies and asthma with recombinant allergens and peptides".

- 1994: International Asthma Symposium, Winnipeg, April 8-9, 1994 "Peptide Immunotherapy: Principles and Potential"
- 1994: 49th Mexican Society of Allergy and Immunology, Manzanillo, Mexico, October 1994. Topics: Genetics and regulation of IgE response, Immunotherapy: past, present and future and participant in Round Table discussions on "Controversies on immunotherapy".
- 1994: Second Annual Congress of British Society of Immunology Meeting, Harrogate, December, 1994 topic: "Downregulation of specific Immune responses with TCR peptides vaccination."
- 1993: International Symposium on Molecular Biology and Immunology of Allergens, February 1993, Vienna. "Intra- and inter-species cross-reactivities among pollen allergens".
- 1993: Fourth International Allergy 2000 Symposium (by Schering-Plough International): "Role of T cells and T cell cytokines in allergic disorders", Vienna, December, 1993.
- 1993: 3rd International Workshop on Suppression, La Jolla, CA, June 1993. Topic: Downregulation of antigen-specific Immune responses with TCR peptides".
- 1993: International Symposium on Recent Advances in Allergology and Clinical Immunology, Taiwan, May 1993.
- 1993: International Symposium Workshop on "Molecular and cellular basis of allergy and autoimmunity" held in Bangalore under the aegis of the 19th Annual Congress of the Indian society of Immunology, January, 1993 (declined)
- 1993: Workshop on "Cytokines in allergic inflammation", 50th American academy of Allergy and Immunology, Chicago, 1993. " Differential expression of IL-2, IL-4 and IFN- after primary sensitization with allergens".
- 1992: Seventh International Symposium on Immunobiology of Proteins and Peptides, "Recombinant allergens and their potential use in immunotherapy", Lake Louis, Canada, October 1-5, 1992
- 1992: Gatlinburg Symposium, June 1992, Knoxville, Tennessee. "Molecular characterization of a novel abscisic acid responsive gene family".

- 1992: Ninteenth Annual Symposium of the Collegium Internationale Allergologicum. May 1992, Capri, Italy. "Therapeutic potential of recombinant allergens".
- 1992: Moderator and Speaker, American Academy of Allergy and Immunology, March 1992, Orlando, Florida. "T cell epitopes of allergens".
- 1992: Mohapatra, S.S., Mohapatra, S., Chen, Y., Takata, M. and Sehon, A.H. (1992) Predominant use of particular chains of TCR in suppressor T cell clones induced by tolerogenic Ag-mPEG conjugates of diverse specificities. Abstracts 8th Int. Congr. Immunol. #90-26, p.555.
- 1992: Mohapatra, S., Y. Chen, M. Takata, S.S. Mohapatra and A.H. Sehon (1992) A unique family of V genes encode TCR chains of cloned suppressor T (Ts) cells, induced by tolerogenic Ag(mPEG)_n conjugates. FASEB J. 6:A1140.
- 1992: Chen, Y., S. Mohapatra, S.S. Mohapatra and A.H. Sehon (1992) Cytokine gene expression of cloned CD8⁺ suppressor T (Ts) cells. FASEB J. 6:A1416.
- 1992: Zhang, L., Sehon, A.H. and Mohapatra, S.S. (1992) Antigen- and isotype-specific antibody responses to a recombinant antigen-allergen chimeric (RAAC) protein. J. Allergy Clin. Immunol. 89:321.
- 1992: Yang, M., Olsen, E. and Mohapatra, S. (1992) IgE and IgG antibody reactivities to a major Kentucky Bluegrass allergen Poa p IX. J. Allergy Clin. Immunol. 89: 319.
- 1992: Ansari, A.A., Alexander, E. L., Plitt, J.R. and Mohapatra, S.S. (1992) PCR analysis of the MHC class II associated invariant chain for structural and expression studies in Diabetes mellitus and other autoimmune diseases. J. Allergy Clin. Immunol. 89:255.
- 1991: Glaxo Workshop on HLA and Allergy Association Study, San Francisco, 1991. "HLA-D typing by rDNA technology".
- 1991: Workshop on "Pollen Allergy". XIV Int. Congr. Allergol. Clin. Immunol., Kyoto, 1991. "T cell cross-reactivity among grass pollen allergens (GPA): Characterization GPA-specific T cell clones".
- 1991: Workshop on "Pollen Allergy", XIV Int. Congr. Allergol. Clin. Immunol., Kyoto, 1991. "The major epitopes of Poa pratensis IX allergens are localized on a conserved carboxy-terminal region".
- 1991: Workshop on "Modulation", XIV Int. Congr. Allergol. Clin. Immunol., Kyoto, 1991. "Molecular characterization of T cell receptors (TCR) of antigen-specific cloned suppressor T (Ts) cells".
- 1991: Workshop on "Pollen Allergy" XIV Int. Congr. Allergol. Clin. Immunol., Kyoto, 1991.

"Development of a peptide expression strategy for the determination of epitopes on allergens".

1990: Joint Workshop on HLA and Allergy Association Studies and the Allergen Database (ALBE), Johns Hopkins Asthma and Allergy Center, Baltimore, 1990. "TCR V genes".

Research Seminars and Invited Guest Lectures:

Rush University Medical Center, Chicago, IL, 2006

Creighton University, Omaha, NE, 2005

Institute of Molecular Medicine, San Diego, 2005

Galenea Corporation, MA, 2005

Boehringer Ingelheim, CT, 2000

Curagen Inc, CT, 2000

Pasteur Institute, Paris, 1999.

European Molecular Biology Organization, Heidelberg, 1999.

University of Bielefeld-Institute of Genetics, Bielefeld, 1999.

Johns Hopkins Asthma and Allergy Center, Baltimore, 1998.

University of South Florida & All Children's Hospital Division of Pediatrics, 1998

University of South Florida & Tampa General VA Hospital Noon Conference, 1997

University of South Florida & VA Hospital Noon Conference, 1997

University of South Florida & All Children's Hospital Division of Pediatrics, 1997

University of South Florida, Department of Internal Medicine grand Round, 1996

Bristol Myer Squibb Pharmaceutical Research Institute, Seattle, 1996

Australian National University, John Curtin School of Medical Research, 1996

University of Sydney, Westmead Hospital, Institute of Immunology and Allergy Research, 1996

University of South Florida, Division of Allergy and Immunology, 1996

Research Round, Department of Pediatrics and Child Health, University of Manitoba, 1996

University of Montreal, Montreal, 1995

University of Sheffield, Sheffield, UK, 1994

Department of Animal Science, Univ. of Manitoba, 1994

Department of Human Genetics, Univ. of Manitoba, 1994

National Institute of Immunology, New Delhi, 1994

Guy's Hospital, London, England, 1993

La Jolla Institute for Allergy and Immunology, La Jolla, CA, 1993

Max-Planck Institute for Immunobiology, Freiburg, Germany, 1993.

Department of Pathobiology, University of Minnesota, St Paul Campus, August 1993.

Department of Allergy and clinical Immunology, University of Minnesota, August 1993.

Department of Genetics, University of Bielefeld, 1992.

Johns Hopkins Asthma and Allergy Center, 1992.

University of Florence, Italy, Division of Allergology and Clinical Immunology, 1992.

International Institute of Genetics and Biophysics, Naples, Italy, May 8, 1992.

Pharmacia Allergy Research Foundation Award Lecture, In: XVth European Congress of Allergology and Clinical Immunology, Paris May 9-15, 1992.

Lofarma Allergeni, Milano, Italy, 1992.

Connaught Center for Biotechnology Research, Toronto, 1992.

Department of Microbiology and Immunology, University of Calgary, October 1992.

Department of Chemistry, University of Manitoba, November 1992.

Mayo Clinic, Department of Immunology, Rochester, USA, 1992.

Department of Biochemistry and Molecular Biology, University of Manitoba, 1991.

ImmuLogic Corporation, Boston, 1991.

Indian Institute of Science, Bangalore, India, 1991.

Department of Botany, University of Toronto, 1990.

b) Research related:

Students supervised/co-supervised:

- | | | | |
|------|--|----------------------|---------|
| i) | Ph.D. Students | | |
| | Lei Zhang, M.D. | Ph.D. 1992 | |
| | Youhai Chen, M.D. | Ph.D. 1992 | |
| | Subhra Mohapatra, M.Sc. | Ph.D. 1993 | |
| | Egil Olsen | Ph.D. 1994 | |
| | (University of Oslo) | | |
| | & Univ. of Manitoba) | | |
| | Gangur Venugopal, MVsc | Ph.D. 1996 | |
| ii) | M.Sc. Students | | |
| | Ming Yang, M.D. | M.Sc., 1992 | |
| | Hui Wang, M.D. | M.Sc., 1991 | |
| | Cao Yanna | M.Sc., 1996 | |
| iii) | B.Sc. Med Student | | |
| | Peter R. Clark | B.Sc. (Med) 1990 | |
| | Allon Davis | B.Sc. (Med) 1994 | |
| (iv) | Summer Students | | |
| | Brendan McClarty | 1995 | |
| | Cynthia Tai | 1990 | |
| v) | Post-doctoral Fellows/Research Associates supervised | | |
| | Andre Silvanovich, M.Sc. Research Associate | 1989-91 | |
| | Egil Olsen, | Research Associate | 1989-91 |
| | (with MRC Group) | | |
| | Ma Luo, Ph.D. | Post-doctoral Fellow | 1990-92 |

- | | | | |
|--------|---|-----------------------------|---------|
| | Research Associate | 1993-94 | |
| | Arvinda Kasyap, Ph.D. | Post-doctoral Fellow | 1992 |
| | Ming Yang, MD | Research Assoc. | 1994-96 |
| (vi) | <i>Visiting Scientists</i> | | |
| | Dr. R. Shu, Ph.D., | Beijing Acad of Science | 1991 |
| | Dr. Yanyun Wang, M.D. | Dept. of Internal Medicine, | 1991-93 |
| | | Shanxi Cancer Hospital. | |
| (vii) | <i>Technicians</i> | | |
| | Andre Hamel, M.Sc. Technician III, | | 1989-90 |
| | Lin Lihua, B.Pharm. Technician III, | | 1990-92 |
| | Darcy Lyn Salo Dipl. Technician III, | | 1992-95 |
| | Judy Cornell Technician, | | 1995-96 |
| (viii) | <i>Graduate Student Advisory Committee:</i> | | |
| | Umu Anzala, Ph.D. Candidate, | | 1992-95 |
| | Department of Medical Microbiology | | |

II. University of South Florida (6/1996-present)

Research Supervision:

Demitri Theodoropoulos, MD, Clinical Research Fellow, on the project "Detection of respiratory syncytia virus in sputum"

Giana N-Kasti, MD, Clinical Research Fellow, on the project "Effect of dexamethazone on epithelial cells."

Kevin Rosenbach, MD, Clinical Research Fellow, on the project "Mechanism of aspirin-induced asthma."

Mukesh Kumar, PhD, Post doctoral training Fellow, on the project "Development DNA Vaccines."

Aruna K Behera, PhD, Post-doctoral Fellow, On the project "Molecular changes in Epithelial cells following infection with respiratory syncytial virus."

Xiang Hu, MD on the project "Identification of genes associated with differential predisposition to IgE immune responsiveness"

Hiroto Matsuse, MD, PhD Post doctoral Fellow, on the project "Adjuvant role of IL12 as a vaccine adjuvant"

Gary Hellerman, PhD, Post-doctoral Fellow on the project, Role of IL-9 receptor in asthma.

Geoff Patton, PhD, Instructor, on Development of Animal Model of RSV infection.

Dan Reichmuth, MD, Clin Res Fellow, on "genetic basis of asthma"

Weidong Zhang, MD, Post-doc, siRNA inhibition of Dengue virus infection and respiratory syncytial virus infection

PK Jena, PhD, Research Instructor, Regulation of ANP gene expression

Dong-won Lee, PhD, Post-doc, Chitosan nanoparticles and gene transfer

Arun Kumar, PhD, Research associate, nanotechnology and diagnostic applications

Biswabhusan sahu, PhD, Post-doc, Chemical synthesis of polymeric nanoparticles

Shawna Shirley, (PhD Candidate) Inducible gene expression systems in mice

Alison Jones (PhD Candidate) Cigarette smoke inducible gene expression in human epithelial cells.

Teaching:

2002, 2005: *Lecturer and Coordinator of course on "Clinical Research Methods"*

2001: *Co-ordinated lecture series on "Molecular Medicine", College of Medicine*

1997-2001: Fellows and residents at the Division of Allergy and immunology and in Internal Medicine in relation to basic immunology, molecular biology and genetics.
College of Medicine Honours Program

USF Summer student training program

Coordinator of the VA Research seminars sponsored by the Division of Allergy and Immunology, 1997-05.

Coordinator of the work-in progress seminars for the research (since 1996-)

Coordinator of the "Forum in Molecular Medicine" for the Department of Internal Medicine Grand Rounds, and Molecular Medicine: Bench to Bedside. 1998, 1999

Coordinator of the Airway Disease Research Center Seminars, 1998-04.

Administration:

Member of Faculty Senate, 1998-99

Member of Faculty Senate Committee on Convocation and Awards, 1999-present

Member of Committees on Committee, College of Medicine, 1999-present

Director of Basic Research, Joy McCann Culverhouse Airway Disease Center, 1999-present

Member of Research and Development Committee, VA Hospital 2004-present

Collaborators: (University, National & International)

Univ of South Florida

COM:

Internal Medicine: Div Allergy & Immunology:

Div Rheumatology:

Endocrinology:

Infectious Disease:

Biochemistry:

Moffitt Cancer Center:

COE:

COPH:

Univ. of West Virginia

Johns Hopkins University

Yale Univ

Harvard Univ

NIPER, India

TGN Inc, Tampa

Richard F. Lockey, MD

Dennis Ledford, MD

Marc Glaum, MD, PhD

Dr. Anna Plaas, PhD

David Vesely, MD, PhD

Jeff Nadler, MD

Eknath Naik, MD, PhD

Dr. William Gower

Gerold Bepler, MD, PhD

Scott Antonia, MD, PhD

Subhra Mohapatra, PhD

Dr, Shekhar Bansali

Dr. Stuart Brooks

Giovanni Piedemonte, MD

Shau-Ku Huang, PhD

Kam Leong, PhD

Richard Flavell, PhD

Raif Geha, MD

MNV Ravi Kumar, PhD

Gitimoy Kar, PhD

Saneron-CCEL

Paul Sanberg, PhD

Ongoing Research Support:

1. RO1 HL71101-01A2 (Mohapatra:PI) Oct. 2003-Sept. 2007. NHLBI
Chitosan IFN- γ -pDNA Nanosphere Therapy and Immunopathology of Allergic Asthma.
 To investigate the potential and mechanism of chitosan-IFN γ DNA nanospheres in the treatment of allergic asthma.
2. R41 HL 0769-964-01 (Mohapatra:PI) Sept. 2004-April 2005 NHLBI
Chliposome Nanoparticle Prophylactics for Allergic Asthma
 The goal is to examine the potential of nanoparticles for the treatment of asthma.
3. R41 HL0782-298-01 (Mohapatra:PI) Sept. 2004-April 2005 NHLBI
Chlipoplex Nanoparticle Prophylactics for RSV Infection
 The goal is to examine the potential of nanoparticles for the treatment of RSV infection.
4. Glaxo SmithKline (Mohapatra: PI) Dec. 2004-Nov.2005 Glaxo SmithKline
Mechanism of fluticasone propionate and salmeterol combination therapy in a 3-D human epithelial cell culture model
 The primary goal of this study is to examine the efficacy and mechanism of combined therapy using beta-2 agonists and steroids in virus-induced asthma exacerbation in a 3-D epithelial cell culture model.
5. GlaxoSmithKline (Mohapatra: PI) Feb. 2005-Jan. 2006 GlaxoSmithKline
Efficacy and safety of intranasal fluticasone propionate and salmeterol in a rat model of allergen and virus-induced asthma
 The primary goal of this study is to examine the efficacy and safety of a combined therapy using a corticosteroid and β -2 agonist in virus-induced asthma exacerbation in a rodent model of allergen- and RSV-induced asthma.
6. NIH-Pediatric Clinical Research Center (Mohapatra: PI) Feb. 2005-Jan. 2006
 Development Grant All Children's Hospital
Role of Natriuretic Peptide-Cascade in the Genesis and Control of Asthma
 The primary goal of this study is to investigate the role of natriuretic peptides in the development of allergic rhinitis and asthma in children and adolescents.

Mohapatra / CV/3206

7. VA Merit Review Award (Mohapatra: PI) April 2005-March 2009
James A. Haley VA Hospital
SiRNA-based Prophylactics for Respiratory Syncytial Virus Infection
The primary goal of the study is to investigate SiRNA-based prophylactics for RSV infection based on NS1 and NS2 genes.
 8. Department of Army. (PI: Weidong Xu, PhD) \$100,000
Development of multifunctional nanoparticles for targeting ovarian Cancers.
The primary goal is to develop and utilize nanogene technology for targeted therapy in collaboration with TransGenex Nanobiotech, Inc.
 9. NIH-Institute of Nursing (PI: Alison Jones)
NRSA Pre-doctoral Award to Alison Jones under the mentorship of Dr. S. Mohapatra (2005-2009)
- Applications Pending**
1. R41 HL083615-01A1. Targeted siRNA delivery with multifunctional nanoparticles. 2006-08 (587,997) Under council review.
 2. NIAID- Asthma Allergic Diseases Cooperative Research Center Grant: 2006-2011 (\$9,433,984)
Natriuretic Peptide Pathway: a Novel target for asthma and allergic disease. This is a multiproject proposal which includes 2 of 4 projects and 3 cores to be located at the USF.
 3. NIH- Forgay International HIV/AIDS Research Training Grant :
Clinical Immunology of HIV/AIDS Research Training Program
2006-2011 (\$1,590,792)
This a joint program with Div of infectious Disease and Div Allergy and Immunology
 4. R21- NIH –Interdisciplinary Environmental Research Program
2006-2009 (\$652, 500)
Control of Ozone-induced oxidant stress and Inflammation (a collaborative program with Dr. Stuart Brooks)
 5. Sandler's Program in Allergy and Asthma Research.
2006-2009 (\$750,000)
Targeting natriuretic pathway in chronic asthma
 6. NIH-NCI: Nanoparticle-mediated targeting of natriuretic pathway for lung cancers.
2006-08 (\$398,750)

PUBLICATIONS: (selected list)

Refereed Publications:

Mohapatra, S.S., Hill, R., Astwood, J., Ekramoddoullah, A.K.M., Olsen, E., Silvanovich, A., Hatton, T., Kisil, F.T. and Sehon, A.H. Isolation and characterization of a cDNA clone encoding an IgE binding protein from Kentucky Bluegrass (*Poa pratensis*) pollen. *Int. Arch. Allergy Appl. Immunol.* 91:362. 1990.

Mohapatra, S.S., Hill, R.D. and Sehon, A.H. Molecular cloning of allergens: progress and perspectives. *Aerobiologia* 6: 205. 1990.

Zhang, L., Kisil, F.T., Sehon, A.H. and Mohapatra, S.S. Allergenic and antigenic cross-reactivities of Group IX grass pollen allergens. *Int. Arch. Allergy Appl. Immunol.* 96:28. 1991.

Luo, M., Lihua, L., Hill, R.D. and Mohapatra, S.S. The primary structure of an environmental stress and abscisic acid inducible protein of alfalfa. *Plant Mol. Biol.* 17:1267. 1991.

Olsen, E., Zhang, L., Hill, R.D., Kisil, F.T., Sehon, A.H. and Mohapatra, S.S. Identification and characterization of the Poa p IX Group of basic allergens of Kentucky Bluegrass pollen. *J. Immunol.* 147:205. 1991. ("Outstanding" citation by Clinical Allergy Digest)

Yang, M., Olsen, E., Dolovich, J., Sehon, A. and Mohapatra, S. Immunologic characterization of a recombinant Kentucky Bluegrass (*Poa pratensis*) allergenic peptide. *J. Allergy Clin. Immunol.* 87:1096. 1991. ("Outstanding" citation by Clinical Allergy Digest)

Silvanovich, A., Astwood, J., Zhang, L., Olsen, E., Kisil, F., Sehon, A., Mohapatra, S.S. and Hill, R.D. Nucleotide sequence analysis of three cDNAs coding for Poa p IX isoallergens of Kentucky bluegrass pollen. *J. Biol. Chem.* 266:1204. 1991.

Zhang, L., Olsen, E., Hill, R., Kisil, F., Sehon, A. and Mohapatra, S.S. Mapping of B cell epitopes of a recombinant Poa p IX allergen of Kentucky Bluegrass pollen. *Mol. Immunol.* 29: 1383. 1992.

Luo, M., Liu, J.H., Mohapatra, S., Hill, R.D. and Mohapatra, S.S. (1992). Structure and expression of a new gene family of alfalfa encoding environmental stress and abscisic acid inducible proteins. *J. Biol. Chem.* 267:15367. 1992.

Zhang, L., Sehon, A.H. and Mohapatra, S.S. Induction of IgE antibodies to recombinant allergens in mice. *Immunology* 76:158. 1992.

Mohapatra, S.S. Recombinant allergens and allergen standardization. *J. Allergy Clin. Immunol.* 89:921. 1992.

Baskar, S., Parronchi, P., Mohapatra, S. S., Romagnani, S. and Ansari, A.A. Human T cell responses to the purified pollen allergens of the grass, *Lolium perenne*: relationship between

structural homology and T cell recognition. *J. Immunol.* 148:2378. 1992.

Olsen, E. and Mohapatra, S.S. Expression and thrombin cleavage of Poa p IX recombinant allergens fused to glutathione-s-transferase. *Int. Arch. Allergy Immunol.* 98:343.1992.

Wang, H., Mohapatra, S.S. and Hayglass, K. Evidence for the existence of IL-4 and IFN- γ producing T cells in the naive T cell repertoire. *Immunol. Lett.* 31:169.1992.

Mohapatra, S.S. and Sehon, A.H. Therapeutic potential of recombinant allergens. *Int. Arch Allergy Immunol.* 98: 265. 1992.

Venugopal, G., Mohapatra, S., Salo, D. and Mohapatra, S.S. Multiple mismatch annealing: basis for random amplified polymorphic DNA fingerprinting. *Biochem. Biophys. Res. Comm.* 197:1382.1993.

Zhang, L. and Mohapatra, S.S. Antigen- and isotype-specific immune responses to a recombinant antigen-allergen chimeric (RAAC) protein. *J. Immunol.* 151:791. 1993.

Mohapatra, S., Chen, Y., Takata, M., Mohapatra, S.S. and Sehon, A.H. Analysis of TCR α and β chains in cloned suppressor T cells of diverse specificities: Implication of CDR3 in antigen recognition. *J. Immunology* 151:688. 1993.

Chen, Y., Mohapatra, S., Mohapatra, S. S. and Sehon, A.H. Cytokine gene expression of the CD8+suppressor T cells. *Cell. Immunology* 149:409. 1993.

Chen, Y., Maiti, P.K., Masaru, T., Mohapatra, S., Mohapatra, S.S. and Sehon, A.H. The suppressor factor of T suppressor cells induced by tolerogenic conjugates of ovalbumin and monomethoxy polyethylene glycol is serologically and physicochemically related to the heterodimer of T cell receptor. *J. Immunology* 152:3. 1994.

Mohapatra, S.S., Mohapatra, S. Yang, M., Ansari, A.A., Parronchi, P., Maggi, E. and Romagnani, S. Molecular basis of cross-reactivity among allergen-specific human T cells: T cell receptor gene usage and epitope structure. *Immunology* 81:15. 1994.

Olsen, E. and Mohapatra, S.S. Recombinant allergens and diagnosis of grass pollen allergies. *Ann. Allergy* 72:499, 1994.

Mohapatra, S.S. Modulation of allergen-specific responses by T cell based peptide vaccines. *Clin. Rev. Allergy* 12:3, 1994.

Venugopal, G., Trivedi, H.N. and Mohapatra, S.S. Arbitrary single short primers identify polymorphic markers that distinguish inbred strains of mice. *Biochem. Biophys. Res. Comm.* 203:659, 1994.

- Mohapatra, S.S. Determinant spreading: implications for vaccine design of atopic disorders. ***Immunol. Today*** (Letter) 15: 596, 1994.
- Mohapatra, S.S., Nicodemus C.F., Schou C and Valenta R. Recombinant allergens and epitopes. ***Allergy & Clin. Immunol. News*** 6:45, 1994.
- Astwood, J., Mohapatra, S.S., Ni, H., Hill, R.D. Barley allergen homologous protein in crop plants. ***Clin. Exp. Allergy*** 25: 66, 1995.
- Mohapatra, S. S. IL-12: possibilities . ***Science*** (Letter) 269:1499, 1995.
- Mohapatra, S.S. Prevention rather than cure of allergies and asthma in twenty first century? ***Allergia*** 42:18, 1995.
- Olsen, E., Fallung, A. and Mohapatra, S. S. Characterization of IgE and IgG antibody responses to grass pollen allergens in non-atopic and atopic individuals. ***Allergy*** 50:734, 1995.
- Venugopal, G., Yang, M., Luo, Z., Salo, D., Chang, M. and Mohapatra S.S. Analysis of Tcrvb8, Il4 and Ifg as genetic predisposition factors for atopic IgE responsiveness in a murine model. ***J Immunology***. 155:5463, 1995.
- Zhang, L., Yang, M., Chong, P. and Mohapatra, S.S. B- and T- cell epitopes of a Poa p IX allergen rKBG60 using synthetic peptides. ***Immunology***. 87:283, 1996.
- Parronchi, P., Mohapatra, S., Manetti, R., Chong, P., Mohapatra, S.S., Maggi, E., Renz, H. and Romagnani, S. Modulation by IFN α of cytokine profile and epitope specificity of allergen-specific T cells. ***Eur. J Immunology***. 26:697, 1996.
- Yang, M., Wang, Y., Zhang, L., Chong P. and Mohapatra S.S. Host genetic and adjuvant factors influence antibody fine specificity to a major recombinant grass allergen. ***Int Arch Allergy and Immunol***. 111:173, 1996.
- Mohapatra, S. S. and Mohapatra S. Application of Molecular Biology to diagnosis and treatment of allergic diseases. ***Immunology and Allergy Clinics of North America***, Co., 16:591, 1996.
- Mohapatra, S.S. An integrated approach to immune deviation and prevention of allergies and asthma. ***Allergy Clin Immunol International***, 8:164, 1996.
- Cao, Y., Luo, Z., Yang, M. and Mohapatra, S.S. Vaccination with a multi-epitopic recombinant allergen (MERA) vaccine induces specific immune deviation via T cell anergy. ***Immunology***, 90:46, 1997.
- Mohapatra, S.S. Is cross-reactivity a real or an imaginary concept? (Correspondence) ***J Allergy Clin Immunol*** 99:724 , 1997.

Tao, F., Yang, M., Halayko, A. Mohapatra, S.S. and Stephens, N.L. Airway hyperresponsiveness differ in two inbred strains of mouse disparate in IgE and IL-4 production. ***Am J Respir Cell Mol Biol***, 17:156, 1997. (With a Perspective).

Behera A.K., Kumar M., Matsuse M., Lockey, R.F. and Mohapatra, S.S. Respiratory syncytial virus induces the expression of 5-lipoxygenase and endothelin-1 in bronchial epithelial cells. ***Biochem Biophys Res Comm*** 251:704-709, 1998.

Yang M, Cao, Y and Mohapatra, S.S. CD8 T cells inhibit IgE synthesis in low responder SJL mice. ***Immunology***, 43:237, 1998.

Kumar M., Behera, A., Matsuse H., Lockey, R.F. and Mohapatra, S.S. A recombinant BCG vaccine generates a Th-1 like response and inhibits IgE synthesis in BALB/c mice. ***Immunology*** 97 (3), 515-521, 1999.

Kumar M, Behera A, Matsuse H, Lockey R, Mohapatra SS. Intranasal IFN-g transfer of prevents respiratory syncytial virus infection in BALB/c mice. ***Vaccine*** 18:558, 1999.

Liu, J.-H., M. Luo, K.-J. Cheng, S. S. Mohapatra and H. D. Hill. Identification and characterization of a novel barley gene that is ABA-inducible and expressed specifically in embryo and aleurone. ***J. Exp. Bot.*** 50: 727-728, 1999.

Lockey RF, Mohapatra S.S. The search for clues to wheeze, itch, sneeze and cough. ***Inquiry***. 2: 1-2, 1999.

Burne M, Haq M, Matsuse H, Mohapatra SS, Rabb H. Genetic susceptibility to renal ischemia reperfusion injury revealed in a murine model. ***Transplantation***; 69: 1023-25, 2000.

Mohapatra S.S. What is 'hot' in asthma therapeutics (AAAAI-Report) ***Investigational Drugs***. 12: 56-58, 22 Mar 2000.

Mohapatra S.S., San Juan H. Novel Immunotherapeutic approaches for the treatment of allergic diseases. ***Immunology and Allergy Clinics of North America***. 20(3): 9-1, 2000.

Mohapatra S.S. Advances in genetics of lung diseases-an update (meeting report). ***Investigational Drugs***.21: 46-49,24 May 2000.

Matsuse H, Kumar M, Behera A, Lockey F, Mohapatra SS. Differential cytokine mRNA expression in dermatophagoides farinar allergen sensitized and respiratory syncytial virus infected mice. ***Microbe and Infection*** 2: 1, 2000.

Matsuse H., Behera A, Kumar M, Rabb H, Lockey R, Mohapatra S.S. Recurrent respiratory syncytial virus infection in allergen-sensitized mice leads to persistent airway inflammation and

airway hyperresponsiveness. **Journal of Immunology**. 164:6583-92, 2000.

Behera, A., Matsuse H., Kumar M., Kong X., Lockey R.F. and Mohapatra S.S. Blocking Intercellular Adhesion Molecule-1 on Human Epithelial Cells Decreases Respiratory Syncytial Virus Infection. **Biochem Biophys Res Commun** 280:188-195, 2001.

Mohapatra S.S. Meetings Report. Allergology and Clinical immunology-XVII International Congress. **IDrugs**, 4:35-37, 2001.

Mohapatra S. S. and R. F. Lockey. Molecular characteristics of Allergens, **Clin Rev in Allergy** 21(2-3):203-13, 2001.

Mohapatra, S.S. and Lockey, R.F. Allergens. In: **Current Review of Allergic Diseases**. Ed. M Kaliner, Current Medicine Inc, PA, pp-51-60, 2001 (2nd edition).

Lockey, R.F and Mohapatra SS (as part The American Lung Association Asthma Clinical Research Centers). The safety of inactivated influenza vaccine in adults and children with asthma. **The New England Journal of Medicine**. 345:1529, 2001.

Kumar M., Behera A. K, Lockey, R.F. and Mohapatra, S.S. IFN- γ and IL-12 plasmid DNAs as vaccine adjuvants in a murine model of grass allergy. **J Allergy Clin Immunol** 108:402, 2001.

Mohapatra S.S. Gene transfer and transcription factors. Meetings Report. American Academy of allergy, Asthma and Immunology, New York, 2002, **IDrugs**, 5:312-315, 2002.

Behera AK, Kumar M, Lockey RF, Mohapatra SS. 2'-5' Oligoadenylate synthetase plays a critical role in interferon-gamma inhibition of respiratory syncytial virus infection of human epithelial cells. **J Biol Chem** 277:25601-8, 2002.

Kumar, M, Behera AK, Lockey RF, Zhang J, Perez de la Cruz C; Chen I, Leong KW, Huang S-K and Mohapatra SS. Intranasal Gene transfer by Chitosan-DNA Nanospheres Protects BALB/C Mice Against Acute Respiratory Syncytial Virus Infection. **Human Gene Therapy**. 13:1415-25, 2002.

Hellermann GR, Nagy SB, Kong X, Lockey RF, Mohapatra SS. Mechanism of Cigarette Smoke Condensate-induced Acute Inflammatory Response in Human Bronchial Epithelial cells. **Resp. Res.** 3:22-30, 2002.

Behera A, Kumar M, Lockey F, Mohapatra SS. Adenovirus mediated IFN- γ gene therapy for allergic asthma: involvement of IL-12 and Stat-4 Signaling. **Human Gene Therapy**. 13:1697-1709, 2002.

Kumar, M. Kong, X., Behera, A. Hellerman, G. Lockey, RF., Mohapatra, SS. Chitosan IFN- γ -pDNA Nanoparticle (CIN) Therapy for Allergic Asthma) **Genetic Vaccines and Therapy** 1:3, 2003.

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